Abstract Submitted
for the NEF08 Meeting of
The American Physical Society

**Earth's Atmospheric $CO_2$ Saturated IR Absorption** ERNST WALL — Using the on-line SpectraCalc IR absorption simulator, the amount of IR absorption by the 15 $\mu$ line of the current atmospheric $CO_2$ was obtained and compared with that of twice the amount of $CO_2$. The simulation required a fixed density equivalent for the atmospheric path length. This was obtained by numerically integrating the NOAA Standard Atmospheric model. While the current line is saturated, doubling the $CO_2$ will cause a slight width increase. Using this and the blackbody radiation curve plus considering the effects of water vapor, the temperature rise of the Earth will be less than 2.5 deg. C. Integrating a NASA Martian atmospheric model, we find that the Martian atmosphere has 45 times more $CO_2$ to penetrate than Earth, and yet, the Martian diurnal temperature swings exceed those of the Sahara desert. I.e., large amounts of $CO_2$ alone do not necessarily cause planetary warming. As the oceans warm from any cause, more $CO_2$ is boiled out, but if they cool, they will absorb more $CO_2$ just as a carbonated drink does, so that temperature and $CO_2$ density will correlate. It is to be noted that the Earth's known petroleum reserves contain only enough $CO_2$ to increase the atmospheric $CO_2$ by some 15%.

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Date submitted: 17 Sep 2008 Electronic form version 1.4